



Australian Government

AVIY4017 Execute advanced helicopter manoeuvres and procedures

Release: 1

AVIY4017 Execute advanced helicopter manoeuvres and procedures

Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Application

This unit involves the skills and knowledge required to execute advanced helicopter manoeuvres and procedures, in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority and national operating standards.

It includes turning a helicopter steeply, performing autorotative flight, and landing on and lifting off sloping ground. It also includes landing, taking off and manoeuvring in a confined area, executing limited power take-offs, approaches and landings, and taking off and landing at a pinnacle or ridge line.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to aircraft operational duties of flight crew, and contributes to safe and effective performance in complex aviation operational environments.

Operations are conducted as part of recreational, commercial and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed independently or under limited supervision within a single-pilot or multi-crew environment.

Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Use for Defence Aviation is to be in accordance with relevant Defence Orders, Instructions, Publications and Regulations.

Pre-requisite Unit

Not applicable.

Competency Field

Y – Aircraft Operation and Traffic Management

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1 Turn helicopter steeply | 1.1 Level turn of nominated bank angle is achieved without altitude change to nominated heading

1.2 Descending turn of nominated bank angle is achieved to nominated heading

1.3 Awareness of higher stall speed in turns is applied

1.4 Helicopter operating limits are not exceeded |
| 2 Perform autorotative flight | 2.1 Appropriate action plan, including task priorities, is formulated that ensures the safe completion of autorotative manoeuvres

2.2 Autorotative flight is entered and maintained at a nominated speed and heading in balanced flight

2.3 Autorotative flight is performed at the optimum range and minimum descent rate speeds

2.4 Heading is altered with helicopter in balanced flight at a nominated speed

2.5 Helicopter is recovered and transitioned to normal flight from autorotative flight using power to a climb at nominated heading and speed

2.6 Helicopter autorotative landing to the ground is performed into the wind, using appropriate mix of control inputs within tolerances of termination point without lateral or rearward movement, and zero or minimum run-on speed

2.7 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and terrain

2.8 Situation awareness is maintained at all times during autorotative flight |
| 3 Land on and lift off sloping ground | 3.1 Surface conditions are confirmed to be suitable for the helicopter type

3.2 Stakeholders are briefed to ensure safe operations in the vicinity of helicopter |

- 3.3 Helicopter is landed from the hover onto sloping ground using appropriate slope landing techniques relevant to helicopter type
- 3.4 Helicopter is lifted off from sloping ground to a hover using appropriate slope landing techniques relevant to helicopter type
- 3.5 Control inputs and adjustments during landing on and lifting off are made in response to wind, surface and applicable aircraft limitations, using appropriate slope landing techniques and helicopter handling procedures
- 3.6 Any abnormal situations are recognised and appropriate controlled corrective action is implemented
- 3.7 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility or terrain
- 3.8 Situation awareness is maintained at all times during lift-offs and landings on sloping ground
- 4 Land, manoeuvre and take off in a confined area**
 - 4.1 Confined area is assessed, an action plan is formulated and a decision is made to operate in the area
 - 4.2 Own pilot capabilities and helicopter performance are assessed, and decisions to take off or land are adjusted accordingly
 - 4.3 Appropriate approach and departure path is identified, prior to intercepting and approach path to nominated termination point is maintained
 - 4.4 Helicopter is safely landed in a confined area using appropriate landing on techniques
 - 4.5 Helicopter is manoeuvred in a confined area while remaining clear of obstructions, and within helicopter operating limitations
 - 4.6 Helicopter departure plan and contingency procedures are briefed prior to departure
 - 4.7 Helicopter is safely taken off from a confined area using appropriate lifting off techniques
 - 4.8 Situational awareness is maintained at all times during manoeuvres in a confined area

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|---|--|
| 5 Execute limited power take-off, approach and landing | <ul style="list-style-type: none">5.1 Need for limited power manoeuvres is established5.2 Decision to conduct limited power manoeuvres is implemented and appropriate action plan is formulated to conduct limited power operations5.3 Helicopter performance is calculated and power requirements are confirmed prior to commencing limited power operations5.4 Appropriate area for a safe take-off and landing suitable for limited power available is selected5.5 Awareness of own capabilities is applied, and limitations and decisions to take-off, approach or land are adjusted accordingly5.6 Limited power take-off is performed, applying maximum or nominated power while maintaining optimum rotor speed (RRPM)5.7 Limited power approach and landing is performed, while managing helicopter airspeed and optimum RRPM appropriate to power available and landing environment5.8 Situational awareness is maintained at all times during limited power manoeuvres5.9 Appropriate allowance is made for wind effects during limited power manoeuvres |
| 6 Take off and land at a pinnacle or ridge line | <ul style="list-style-type: none">6.1 Suitable pinnacle or ridge line is selected and assessed, helicopter performance is assessed and/or confirmed, approach and landing plan is formulated, and decision is made to operate onto the area6.2 Awareness of own capabilities is applied, and limitations and decisions to take-off or land are adjusted accordingly6.3 Helicopter is safely landed on a pinnacle or ridge line using appropriate landing on techniques6.4 Helicopter is safely lifted and taken off from a pinnacle or ridge line using appropriate lifting off techniques6.5 Situational awareness is maintained at all times during take-offs, approaches and landings at a pinnacle or ridge line6.6 Appropriate allowance is made for wind effects , landing surface conditions and approach/departure path obstacles during take-off, approach and landing at a pinnacle or ridge |

line

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

This unit replaces and is equivalent to AVIY4017B Execute advanced helicopter manoeuvres and procedures.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>

Assessment Requirements for AVIY4017 Execute advanced helicopter manoeuvres and procedures

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- adapting to differences in equipment and operating environment in accordance with standard operating procedures
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant helicopter aeronautical knowledge
- applying relevant legislation and workplace procedures
- communicating effectively with others
- completing relevant documentation
- following air traffic control procedures and instructions
- identifying and correctly using relevant equipment
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- interpreting and following operational instructions and prioritising work
- interpreting/using a helicopter manufacturer height-velocity diagram/graph
- modifying activities depending on workplace contingencies, situations and environments
- monitoring and anticipating operational problems and hazards and taking appropriate action
- monitoring work activities in terms of planned schedule
- operating electronic communications equipment to required protocol
- performing autorotative flight:
 - power recovery
 - power termination
 - autorotative landing
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using relevant equipment
- selecting and using required personal protective equipment conforming to industry and WHS/OHS standards

- setting local or area barometric pressure adjusted for sea level (QNH) at appropriate stages of flight
- solving problems
- using instruments to monitor helicopter performance
- working collaboratively with others
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- actions to be conducted following a forced landing
- aerodynamic factors affecting helicopter flight performance, including:
 - aerodynamic forces
 - dynamic rollover
 - settling with power
 - recirculation
 - loss of tail rotor (anti-torque) effectiveness (LTE)
- all applicable checklist items
- application of a height/velocity diagram/graph
- basic principles of aerodynamics
- CASR Part 61 Manual of Standards Schedule 3 Aeronautical Knowledge relevant to helicopter operations
- cross-wind and rotor control limits for a helicopter
- crosswind loss of rotor control limits for helicopter type flown
- emergency radio procedures
- functions and effects of all helicopter controls
- hazards and risks when executing advanced helicopter manoeuvres and procedures and precautions for controlling the risks
- helicopter performance limitations
- local air traffic control procedures and instructions
- local weather conditions
- pinnacle and ridge line landing techniques:
 - intercept and maintain the approach path to the termination point
 - maintain effective translational lift until touchdown is assured
 - terminate to a hover over selected landing and lift-off area
 - touchdown on nominated touchdown point

- control helicopter on the ground
- pinnacle and ridge line lift off techniques:
 - plan take-off from in a pinnacle or ridgeline
 - calculate and confirm helicopter take-off performance is adequate for departure
 - determine an appropriate abort point as required
 - conduct take-off and departure from pinnacle or ridgeline remaining clear of obstacles with a margin that is applicable to the operation
- power required and power available curves
- pressure altitude and density considerations
- problems that may occur when executing advanced helicopter manoeuvres and procedures, and appropriate action that should be taken in each case
- procedures for using performance charts
- purpose and functions of helicopter systems
- relevant instructions, procedures and information
- relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- relevant WHS and environmental procedures and regulations
- typical hazards and risks associated with conducting advanced manoeuvres, and precautions and procedures to control the risks
- wind and terrain effects.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

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Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- acceptable means of simulation assessment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in

industry.

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